EDITORIAL ARTICLES.

BURGER ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF EMPYEMA OF THE ANTRUM OF HIGHMORE.[1]

Of the various walls of the antrum of Highmore the posterior one is the strongest. The tuberosity of the maxilla is so firm and solid that the clinician is rarely obliged to take cognizance of it. Next in strength is the facial wall; then the orbital; and, finally, the nasal, which in one portion—*pars supraturbinalis*—is composed almost entirely of soft parts. The nasal wall, therefore, and not the facial, is the *locus minoris resistentiæ*. An evident distention of the canine fossa is by no means a common symptom, and is especially rare as a result of an "enclosed empyema." Its presence, on the contrary, indicates that something more than a simple empyema is present,—perhaps a neoplasm within the antrum.

The old method of basing the diagnosis of antral empyema chiefly upon the external swelling of the canine fossa is erroneous. The nasal wall and not the facial one is the most important field to investigate. Inspection of the nasal cavity, and not the mere palpation of the face, is the essential part of the diagnosis. Whoever judges of the condition of the antrum by the latter method alone treats the case as intelligently as if, in a case of suspected disease of the lungs, he were to confine his examination to the taking of the pulse, and looking at the tongue, and neglect percussion and auscultation.

The history of the case will in many instances lead to a correct diagnosis. When a patient, after suffering for some time from toothache, caused by a carious upper molar tooth, suddenly develops pain around the eye, and pus begins to discharge continuously from the corresponding nostril, antral disease is certain. Equally suggestive is it when, after the subsidence of an acute nasal catarrh, the secretion recommences upon one side only, purulent, stinking, and profuse, followed shortly by a train of alarming subjective symptoms.

---

[1] Dr. H. Burger, Amsterdam: Sammlung klinischen Vorträge, 1894, No. 111.

These subjective sensations group themselves about the diseased cavity in such a way that they appear to offer a secure support for the diagnosis. Pain over the cheek is often complained of, or a gnawing, boring, or nibbling sensation, as if an animal was burrowing within the bone. Pain referred to the upper teeth of the affected side is not infrequent; also a sense of pressure in the maxillary wall of the orbit. These various symptoms, however, must not be over-estimated. Infra-orbital neuralgia, together with a one-sided purulent discharge, occurs with empyema of the ethmoidal and frontal sinuses, and, on the other hand, may be entirely absent in antral disease. Supra-orbital neuralgia and oppressive or boring pain over the frontal sinuses are, perhaps, a more frequent accompaniment of the axillary sinus disease than is pain in the cheek. The headache, unilateral and unbearable in some cases, may be altogether absent in others. The same is true of the disturbances of cerebral functions,—loss of energy, apathy, dizziness, sleeplessness, somnolence.

All these troubles are either the direct result of the antral inflammation or they are indirectly dependent upon the empyema, and give symptoms of the diseased conditions caused by the constant presence of pus within the nasal cavity. From these secondary lesions a series of evils may develop, which sometimes become so prominent as to completely mask the true etiology. This is particularly true of the cerebral symptoms,—headache, lachrymation, disturbances of taste, smell, and hearing, spasmodic sneezing, and the whole list of reflex neuroses of the nose. The picture of the disease in its entirety is therefore a complex one.

Still another train of symptoms may arise when the pus constantly drains out from the antrum and trickles down upon the mucous membrane of the pharynx, posterior nares, and the larynx. Davidsohn[1] reports a patient suffering from a bilateral empyema, who for many weeks could not rest at night; when he lay down the pus ran back into his larynx and caused violent attacks of coughing. In a case which was treated by Burger himself the discharge of pus from one antrum caused such an acute pharyngitis that swallowing became very painful. Inspection of the fauces revealed the fact that the mucous membrane was flecked with pus, and this led to the discovery of the true nature of what had been diagnosed as a malignant angina.

The swollen mucous membrane not infrequently gives rise to the subjective symptoms of closure of the Eustachian tube; roaring or pressure in the ear, cracking in the ear after swallowing, decrease in hearing; all usually on the side corresponding to the diseased antrum. Digestive disturbances also arise, and it is no wonder that the continuous swallowing of a putrid secretion causes anorexia, nausea, and even gastritis.

Of the objective symptoms, fever may be absent, moderate, or extreme. It usually increases if the *ostium maxillare* is temporarily occluded. It varies with the nature of the infection, with the constitution of the patient, and with other similar influences. The anæmia, emaciation, and mental depression, which usually attend all chronic suppurative diseases, are not wanting in this disease.

Among the external symptoms, distention of the canine fossa is of rare occurrence. It is seen much more frequently as the result of a progressive periostitis, originating in a carious tooth; an empyema of the antrum may develop simultaneously from the same cause.

Exophthalmos, due to pressure upon the orbital wall of the antrum, is also a great rarity.

Fistulas are rare; the *ostium maxillare* nearly always remains open, and in those cases where it does close, the nasal wall being the weakest, is the side through which the abscess usually breaks.

Abscesses of the face and within the orbit, and the various forms of inflammations of the eye are not uncommon, for it is possible for the causes of suppuration to pass through the normal channels in the bone without a true perforation.

---

[1] Berliner klinische Wochenschrift, 1892, No. 27, p. 667.

Swelling of the cheek, of the upper lip, of the oral mucous membrane, or of the gums themselves, is observed with relative frequency. These swellings are sensitive upon pressure, and may disappear with the same rapidity as they have appeared. They are usually the result of a temporary occlusion of the normal outlet, and when this again becomes patent they disappear.

Facial erysipelas is now and then observed.

Very frequently diseased teeth are to be found upon the side of the affected antrum. These may have been the starting-point of the empyema, or, on the contrary, they may have become involved as a result of that condition. It is a remarkable fact that in many cases where empyema has originated from carious teeth no diseased teeth are to be found; an examination shows either the presence of teeth that have been filled, or that the teeth have already been lost.[1] A careful examination of the mouth should never be neglected.

Most significant of all of the external symptoms is the discharge of pus from the nose, and this is often very characteristic. It differs from an ordinary catarrh by being upon one side only; the other nostril remains free from any discharge. It is possible for both sides to be the seat of an empyema. A purulent discharge limited to one side of the nose may be the result of an empyema of some one of the other accessory sinuses, or to the presence of a foreign body or the growth of a neoplasm. Another peculiarity of the discharge in antral disease is that it is, as a rule, more profuse in the morning. During the day the pus is more or less constantly removed; during sleep, on the contrary, an opportunity is offered for its accumulation within the nose, and these accumulations empty themselves as soon as the vertical position is again resumed. The *ostium maxillare* is very near the roof of the antrum, and so during the day the discharge is really an overflow. Should the patient lie upon the back or upon the sound side of the head the antrum will readily empty itself. The patient may therefore be comparatively free from annoyance during the day, but be greatly distressed by the continuous discharge of pus into the pharynx as soon as he tries to sleep.

---

[1] See Walb, Erfahrungen, Bonn, 1888, pp. 11–31.

The symptoms often show a marked periodicity in their occurrence ; a time of comparative comfort is often followed by a copious discharge. This is doubtless due to a temporary stoppage of the exit, for the cessation of the discharge corresponds with the beginning of marked increase in the severity of general subjective symptoms. It is not uncommon to read in the history of a case that the painful headache, neuralgia, sleeplessness, and fever suddenly disappeared with the onset of a profuse discharge of pus from the nose. Not infrequently the patient himself will make the statement that a gathering in the head has broken its way out through the nose.

The inspection of the nasal cavity is the most difficult part of the examination. One of the first things which may attract attention is a projection of the antral wall towards the median line. This occasionally appears in the middle anterior part of the middle meatus, and according to the description of Hartmann,[1] who has observed it in half of his cases, it looks as if there were a second middle turbinated bone behind the first. The use of a sound will show that the swelling is bony in character, and not due merely to swollen mucous membrane. Moderate pressure upon this projecting wall with the galvano-cautery or even with the probe will penetrate the wall, and give direct access to the antral cavity.

This bony deflection must be carefully differentiated from the "lateral tumor of the mucous membrane," described by Kaufmann.[2] This latter form of growth which Kaufmann found in nearly every case of empyema, and which he regards as pathognomonic of the disease, appears as a large, long, slightly-raised mass, beginning high up in the nose and extending obliquely to the point of origin of the lower turbinated bone. The tumor is often so close to the septum that the middle turbinated bone is completely concealed from view, and the growth may easily be taken for the bone itself. It is identical in structure with polypoid hyperplasias of the mucous membrane, and is probably due to disturbances in the circulation and nutrition of the mucous membrane, and not to the irritation of secretion.

---

[1] Deutsche medicinische Wochenschrift, 1889, No. 10, p. 190.

[2] Monatschrift für Ohrenheilkunde, 1890, Nos. 1–8.

Burger himself has never seen this form of tumor, although he has frequently observed a circumscribed swelling in the region of the *hiatus semilunaris*, not lying in the position described by Kaufmann, nor corresponding to it in form.

The most important point in the examination is to determine the exact place at which the purulent discharge enters the nasal cavity, in those cases where pus is found only in the vicinity of the *ostium maxillare* and in the *hiatus semilunaris*, and upon the convex side of the lower turbinated. When the secretion is abundant, it is frequently found upon the floor of the nose. In some cases the affected half of the nose is nearly completely filled with pus. This must be thoroughly cleansed with cotton swabs, and it is often found that, with the exception of the floor of the nose where the collection of pus is greatest owing to the force of gravity, the amount is greatest in the middle meatus and not in the upper portion nor between the middle turbinated bone and the septum. This point is of the greatest importance. The difficulty is to find out from which of the various cavities the pus comes. If upon repeated examinations it is found that the pus is always beneath the middle turbinated, and never upon the convexity of this bone, this argues against the involvement of the ethmoid or sphenoid sinuses, as their openings are above the middle bone. Beneath the middle turbinated, besides the ostium maxillare, are the openings from the frontal sinuses and from the anterior ethmoidal cells. The discharge from the frontal sinus usually appears at a point anterior to the antral opening. These various facts must usually be discovered by repeated examinations.

Empyema of the ethmoid cells cannot be diagnosticated merely from the place where the pus appears. A very abundant secretion is probably due to antral disease instead of ethmoidal, for with a profuse discharge from the ethmoid cells there is usually softening of the bone, which can be determined by the use of a sound.

It is of greater significance in the diagnosis of an empyema in the various sinuses, when, after the pus has been carefully wiped away, more appears at once at the same place.

After the nose has been carefully dried by means of pledgets of cotton, there can be observed, at times, the pulsating light reflex in the *hiatus semilunaris;* this precedes the reappearance of pus. The analogue of this appearance in cases where the ear-drum is perforated is well known. According to Schöller,[1] who first described this symptom, and Walb,[2] the acute hyperæmia involving the inflamed nasal mucous membrane produces pulsation in easily movable bodies, such as fluids, and this can be determined by means of reflected light. The appearance will usually be manifested at the place where moisture first appears upon the dried surface. Although this pulsating light reflex appears much more rarely in the nose than in the ear, when it is observed it is a valuable factor in making the diagnosis.

Finally, B. Fränkel[3] has given us a means of diagnosis, which may often be used with advantage. After a careful cleansing of the middle meatus, the patient assumes for a short time a position with his head hanging down, and with the well side lower than the diseased one. Immediately after the patient assumes an upright position an examination is made and very frequently pus will be found in the middle meatus, and the corresponding side of the nose will be almost filled with pus. With empyema of the frontal sinus this will not occur, because the natural opening of this cavity is found in its floor. In ethmoid empyema, too, the phenomenon is but rarely observed; in any case the amount of pus which flows out will be much smaller.

The greatest difficulty occurs in those cases where no pus is found in the hiatus. The examination must then be frequently repeated, a task which, in most cases, does not remain unrewarded.

Ziem[4] recommends that the secretion should be increased by means of internal administration of iodine. Whether this means is really of value for the purpose mentioned is problematical; but the analogy of a similar use of iodide of potash in obscure cases of pulmonary tuberculosis renders its value not unlikely.

---

[1] Ueber die Anbohrung der Highmorshöhle, Inaug. Diss., Bonn, 1885, p. 23.

[2] Erfahrungen, etc., Bonn, 1888, p. 10.

[3] Berliner klinische Wochenschrift, 1887, No. 16.

[4] Monatschrift für Ohrenheilkunde, 1886, No. 4, p. 138.

Occasionally no pus is found, and yet the rhinological examination renders the probable presence of a purulent process within the nose. A constant moistening of the nose with pus from the antrum causes necessarily secondary changes, and when these are localized in the region of the ostium they form a basis for the diagnosis.

It is not uncommon to find one or more mucous polyps close to the *ostium*, which are doubtless caused by the suppuration. In other cases the growth may be in the form of granulation tissue about the hiatus. These granulations are rarely a continuation of the granulations within the antrum; at times, they indicate caries of the circumference of the ostium maxillare. The use of the probe will differentiate these various forms.

The most frequent secondary change in the nose is a swelling of the mucous membrane. This is either localized about the hiatus or diffused over the lower portion of the nasal cavity. It is to be remembered, however, in all of these cases that asymmetry, as a result of injury or deflection of the septum, is not uncommon in healthy persons.

A chronic dry catarrh is often observed in the nose. The mucous membrane appears dull, is atrophic rather than hypertrophic, and is covered with firmly-attached crusts. Why in one case, as a result of the action of pus, swelling or polyp-formation should occur and in another a dry catarrh is not known; but both conditions occur. A one-sided, dry catarrh is very significant of a local causation, and, in any event, a bilateral catarrh does not exclude the possibility of an empyema upon one side. Although an offensive odor can be present with a secondary atrophic catarrh, yet the peculiar thick, green-gray crusts and characteristic stench of ozæna have never been observed by Burger, as a consequence of purulent inflammations in the sinuses. On the contrary, in typical cases of ozæna repeated examinations have not shown the disease to be caused by empyema, although, since Grünwald's[1] publication appeared, repeated attempts have been made to substantiate his statements in this regard.

Although in some cases the secondary changes just described aid us to recognize the trouble, they may, on the other hand, form a marked hinderance to our examination. At times it is necessary to free the nose from polypoid and similar growths before the examination can be satisfactorily made. If we have to do merely with a hyperæmic swelling, cocaine affords an excellent means of enlarging the field of examination. Ten minutes after the application of a 10-per-cent. solution to the swollen mucous membrane a local contraction has taken place, which greatly facilitates the examination.

Secondary changes, as a result of the purulent discharge, are not confined to the nose alone; they are found, at times, on the mucous membrane farther back, most frequently in the posterior nares, in the pharynx and the larynx. Taken in connection with the other symptoms, these more remote lesions have a certain diagnostic value.

Transillumination is the latest addition to the list of diagnostic methods. It is based upon the transparency of physiological normal tissue, and the opacity of pus. According to Heryng[2] and Vohsen[3] the examination is made by taking the patient into a completely darkened room, and placing in his mouth a small electric light around which he closes his lips. Immediately the cheeks, the under eyelids, and the root of the nose appear out of the darkness in a clear rosy glow. The rays of light pierce through the roof of the mouth into the antrum and the nasal cavity, then through still another layer of tissue and the skin, before reaching the eyes of the investigator. If, now, the antrum on one side is filled with pus, the passage of the light is hindered and the corresponding half of the face remains dark.

Although in the majority of cases this method is trustworthy, it must not be over-estimated; nor is it the universal and unfailing

[1] Grünwald, "Die Lehre von den Naseneiterungen," 1892.

[2] Berliner klinische Wochenschrift, 1889, Nr. 35, S. 774.

[3] Berliner klinische Wochenschrift, 1890, Nr. 12, S. 274.

method of diagnosis, which some writers have maintained. Even in those cases where no pus is present, the asymmetry of structure in certain individuals will produce a corresponding asymmetry in the intensity of illumination.[1]

As a result of Burger's personal investigations, he has discovered a phenomenon to which he attaches a still higher diagnostic value than to the illumination of the cheek. It is the transillumination of the eye. The light penetrates not merely the antral wall, but also is able to penetrate a part of the orbital wall, and even the fundus of the eye. The use of this illumination of the eye for diagnostic purposes was first proposed by Davidsohn.[2] He maintained that this pupil-phenomenon was of more value than the lighting up of the cheek, because the rays of light can reach the eye only after they have passed through the floor of the antrum. The smallest amount of pus in that location will stop the rays and leave the eye without illumination. On the other hand, the presence of a small quantity of pus will not prevent the lighting up of the cheek, as the reflected light from the nose, passing through the upper part of the antrum, will be sufficient to cause this phenomenon.

Unfortunately this method has its dark side, for in many normal persons no illumination of the pupil can be produced; this was the case in half of the persons examined.

One thing, however, appears to be a constant symptom, and that is the subjective sensations of light, caused by the presence of the lamp within the mouth. The action of the light upon the lower part of the retina gives a sensation of light in the upper part of the field of vision. That a person perceives two distinct visual impressions which do not form a single image is due to the fact that the affected areas of the two retinæ are not identical; in this lies the diagnostic value of the phenomenon. The patient receives upon each eye a separate sensation, and is able to tell if one or the other is wanting. But one person in all the normal cases examined by Burger failed to perceive the sensation upon both sides.[1] Of the patients suffering from empyema, all, without exception, declared that they perceived the light upon the healthy side only. Two patients who suffered from a bilateral empyema perceived no light upon either side, but as soon as the disease was cured were able to perceive it upon both sides. This method, therefore, seems to be applicable in all cases,[2] is easier to use, and, unless amaurosis exists, is much more certain in its results than the transillumination of the cheeks.

---

[1] Lichtwitz (Bulletin médicale, 1890, No. 86) observed that the diseased half of the face remained dark after the thorough removal of the pus. Burger also has frequently made the same observation, but does not regard this as an argument against the diagnostic significance of transillumination. It simply goes to prove that the opacity of the inflamed antrum may be caused by swelling of the mucous membrane, hyperæmia, and granulation tissue-formation, as well as by pus.

[2] Berliner klinische Wochenschrift, 1892, No. 27 und 28.

As in every other method of procedure, there are certain details of technique which must be learned by experience. The room must be completely dark. In estimating subjective impressions the patient should close the eyes, and hold them closed with the fingers. In examining the pupil the illuminated cheek must be covered. By beginning with examining himself and a number of healthy persons, the investigator will soon learn to overcome the difficulties of technique, and to correctly interpret the value of the various symptoms.[3]

When careful examinations fail to show positively that pus is present, exploratory aspiration or exploratory irrigation may be tried.

For this purpose the surgeon may drill through the nasal wall of the antrum from the anterior part of the inferior meatus, and then use a syringe to aspirate the pus. In most cases this is easily done. Cocaine is first used, and then a thick, curved, hypodermic needle is forced through the wall. Several different punctures may be needed to find the purulent collection, and if the results are negative, no positive conclusion can be reached; the pus may be temporarily drained away or it may be too thick to pass through the needle, or the tip of the needle may be embedded in a mass of granulation tissue.

---

[1] This patient had had a variety of chronic nasal troubles, and had had several bony deformities removed.

[2] Even in the less intelligent class of people, notwithstanding Ziem's statement (Monatschrift für Ohrenheilkunde, 1892, No. 12), this phenomenon will be accurately noted.

[3] See also Garel, Annales des Maladies de l'Oreilles, etc., 1893, No. 2.

More definite results may be expected from the methods of exploratory irrigation. Puncture should be given the preference only in cases of true "closed" empyema. Irrigation may be performed either through the ostium maxillare or occasionally the ostium accessorium, or through an artificial opening made in the nose or in the mouth.

Generally, irrigation is far better performed through an artificial opening made in the lower part of the antrum, in the alveolus, in the canine fossa, or in the inferior meatus of the nose.

Ziem recommended that the opening should be made by means of a dental engine in the space between the teeth, preferable between the second premolar and the first molar. Burger is much pleased with the dental engine as a means of making the opening, but regards the nose as the proper place through which the antrum is to be opened.

Burger recommends that a long, fine, straight trocar be passed through the antral wall from the inferior meatus of the nose, and that through this a weak antiseptic solution be injected; while the patient bends his head forward, the liquid as it escapes may be caught in a basin. The nose, of course, must be thoroughly cleaned beforehand.

These various methods of procedure should enable one to make the diagnosis of empyema of the antrum of Highmore with ease and with certainty. Whether transillumination or exploratory irrigation should be used is a question that must be decided according to the individual case: both methods are valuable, and each strengthens the other. Transillumination has the advantage of being absolutely harmless, and of being performed without the necessity of drilling through a bony wall; in connection with the other symptoms it gives a satisfactory diagnosis in the majority of cases. Where an element of doubt still remains, puncture or irrigation should be performed.

Periostitis and ostitis of the superior maxilla may have many symptoms in common with empyema of the antrum, and may also be caused by caries of the teeth. In these conditions swelling of the jaw is found, and after the removal of diseased teeth pus escapes. The use of a probe will now demonstrate in most cases that the abscess is situated in the jaw itself, and not within the antrum. In these cases the nose remains free from evidence of disease; this is also true when dental cysts develop on the anterior surface of the jaw.

The mucous glands of the antrum of Highmore occasionally show a tendency to form cystic enlargements. From the increase in size of such cysts extensive polypoid mucous tumors may result; filling the entire cavity, and by progressive growth may even cause a distention of the antral walls. So long as these are small they give no trouble whatever, but as soon as pressure upon the walls is exerted a series of subjective symptoms appear, which will usually direct the attention of the physician to the antrum. The absence of nasal suppuration, the lack of indications of inflammation, and the pressure upon the walls, are all evidences of cyst-formation. From a solid tumor or from an empyema the cysts can be distinguished by the undiminished transillumination. Indeed, it is probable that, when the antrum is distended in this way, the phenomenon of transillumination is more marked than upon the healthy side of the face. Voltolini,[1] in a case which he had diagnosticated as antral sarcoma, was astonished to find that transillumination was especially well marked upon the diseased side. Exploratory puncture will also serve as a mode of differentiation.

Malignant tumors of the antrum demand especial care in their diagnosis. When there is no distention of the wall, and yet there is some considerable secondary suppuration, this cannot, of course, be distinguished from a simple empyema of the antrum. In cases of obstinate empyema, after vainly using irrigation, insufflation, and the other modes of treatment in vogue, opening, curetting, and tamponnade of the cavity will be required, and even before this the question of neoplasm will have been suggested and decided. In other cases, where a distention of the wall really exists but without suppuration, these facts, taken in connection with the darkness of the side upon transillumination, and negative results obtained by exploratory puncture and irrigation, renders a tumor very probable, and indicates that the cavity should be thoroughly opened and explored.

---

[1] Die Krankheiten der Nase und des Nasenrachenraumes, 1888, Nachtrag.

It will be at once perceived, after a careful perusal of this article of Dr. Burger, that the subject under discussion has been very carefully and thoroughly treated. The contents of this little brochure should prove of interest and value to the general surgeon and physician as well as to the specialist in rhinology.

H. P. DE FOREST.

SCHEDE ON THE NON-OPERATIVE TREATMENT OF CONGENITAL DISLOCATIONS OF THE HIP.[1]

SCHEDE has since 1880 treated these cases by orthopædic methods, which have given him excellent results. Upon the ground of his experiences he holds that the congenital dislocation of the hip-joint is by no means the incurable condition which it has been supposed to be, and that under certain circumstances it cannot only be greatly improved, but brought to a complete anatomical cure.

His method rests upon the fact that in the vast majority of children with congenital hip dislocation, in whom no secondary changes have been caused by walking, a simple traction upon the leg and a slight abduction suffice to place the head in the acetabulum, and that, further, a moderate lateral pressure upon the greater trochanter is only necessary to retain the head of the bone in this position.

After the child has begun to walk, the prognosis is less favorable. By the end of the second year, certainly in the third, the changes have become so marked that simple manual extension no longer suffices to reduce the deformity. But in such cases the employment of continuous extension by means of weights for a few weeks or months so restores the positions that, with abduction and pressure over the trochanter, the head of the bone may be made to go back into its place and remain so firmly that pressure upon the sole of the foot no longer causes it to ride out.

---

[1] Verhandlungen der deutschen Gesellschaft für Chirurgie, XXIII Kongress, 1894.

In order to combine the lateral pressure over the trochanter with extension, Schede has had constructed splint apparatus, which differs from the common splint of Taylor in that the abduction-hinge is transferred from its position above the flexion-hinge for the hip-joint at the upper border of the pelvic band, and placed a little below the flexion-hinge. The screw which regulates the angle of abduction does not now work against the pelvic girt, but against the upper part of the cuirasse, which extends up to the tip of the trochanter. This itself is changed into a two-armed lever, the hypomochlion of which is the abduction-hinge. The more the abduction, the stronger the pressure becomes upon the upper border of the thigh-piece against the trochanter major. The counter-pressure comes upon the sound side of the pelvis through the pelvic girt. In the application of the apparatus, the following cautions are laid down:

(1) In putting on the shoes no pressure should be exerted upon the hip-joint. The pressure should be counterbalanced by extension upon the leg.

(2) The abduction-screw permanently fixes the position which the physician wishes. It should be so arranged that it cannot be accidentally turned.

(3) When the shoe has been put on and the upper and lower leg pieces fastened, one person takes hold of the leg and splint and makes strong extension in the direction of abduction, while another fastens the pelvic girt.

This splint should be worn till a cure is effected. As repairs have to be made in such apparatuses, a duplicate should always be on hand. The child should not take a single step without the apparatus after the treatment is once begun. At night moderate extension of four or five pounds is kept up by the use of the air-pillow leg-girt.

The apparatus should be gone over and readjusted at least every six or eight weeks.

Schede presented before the Congress a number of patients treated after his method. The first was a fifteen-year-old girl, who, when she was eleven months of age, suffered an unfavorable prognosis from Martini and R. von Volkmann. For three months she was treated by Schede in moderate extension. The splint was then applied, and at the end of a year she was completely cured. For the sake of safety she wore for six months a short abducting splint. Since then she had had no treatment. The cure is absolute and complete. The function of the joint is normal, and nothing abnormal can be discovered about the joint.

He presented also a five-and-a-half-year-old girl, which he had begun to treat three years before; and a twelve-year-old boy upon whom he began treatment at the age of six. In these the treatment is not completed, but a good result is certain. They walked without splints without limp. The head is in the position of abduction, and when the leg is in normal position the head is entirely in place, and the trochanter is at the proper height. A slight dislocation can be detected when the leg is strongly adducted, and at the same time the thigh is pulled upward.

Schede also reports four children which came under treatment at the age of from five months to eighteen months. The duration of treatment was one to four years.

Eleven others, among which are the two cases presented, are nearly cured, and excellent results will be obtained in all. Treatment was begun at ages ranging from seventeen months to four years. Only the boy presented was six years old. They wore the splints from eighteen months to six years.

Great improvement has been secured in eleven more cases, in which treatment was begun at ages ranging from two to five years. In all of these a considerable period of treatment by extension had to be employed, though the head in all cases was brought into place and held there by the splint.

Among four cases somewhat older, eight to ten years, three patients after wearing the apparatus over a year were greatly improved, inasmuch as the leg was lengthened, and the gait much improved. They still wear the splint. The fourth case was made to discontinue the use of the apparatus because the parents lost patience with it.

In contrast to these, eight cases are reported in which the results are less satisfactory. In three the parents did not show the necessary interest, and the treatment was eventually abandoned. In six children, ranging from three to seven years of age, the secondary changes were so great that a reduction of the dislocation could not be accomplished. Orthopædic treatment was not tried in these cases. Two of the cases were operated upon and good results obtained.

In four other cases of children, from two to three years of age, the treatment was carefully carried out for some years, but no satisfactory result was reached. Two of these were cured by operation.

Schede has thus reported his experience with twenty-nine cases, —four cured, eleven almost cured, and fourteen but slightly improved, —of which the majority will have a good result. There are eight cases without result, and eight which were lost sight of, six of which were not adapted to the treatment.

Besides the fifty-one single cases, Schede has had thirty double dislocations.

He regards an early diagnosis of the greatest importance, as having a bearing of much moment upon the treatment and prognosis.

JAMES P. WARBASSE.

CASTRATION FOR PROSTATIC HYPERTROPHY.

IT is not two years since J. William White communicated to the American Surgical Association the results of his experiments for inducing atrophy of the prostate in dogs by removing their testicles, and pointed to the marked and speedy diminution of the prostate thus uniformly induced as suggesting the probability that in the hypertrophied prostates of men an equally marked shrinking would follow the same procedure.

Search in literature had enabled him to marshal in addition a very limited number of observations in comparative anatomy, recorded by Hunter, Owen, and Griffiths, that lent additional weight to his own investigations. To these could be added certain observations upon the atrophied condition of the prostate in eunuchs and one case where the growth of the external genitals had been arrested in boyhood. This was the sum total of recorded knowledge of the influence exerted upon the prostate gland by the testicles that at the time of the publication of White's memoir was in the possession of the medical profession.

The effects of the removal of the ovaries upon the uterus and upon uterine myofibromata were well known generally, and it is doubtless the fact that the similarity in structure between these uterine growths and the prostatic growths awakened in the mind of White the idea that it might be possible to affect the latter through the testicles as favorably as the former were affected through the ovaries and that prompted him to his experiments. The final suggestion of the therapeutic application of castration for the relief of prostatic hypertrophy, with which his memoir was concluded, was, evidently, not a haphazard idea, but was a logical deduction from an adequate and well-considered series of already established facts. The novelty of the proposition made its proposer show proper caution in recommending it to the attention of the profession, even after he had worked it out, and he forestalled unfavorable criticism by stating that he himself had not then formed definite and final convictions on the subject, but advanced the suggestion for the purpose of provoking discussion and trial.

It is quite evident that the Philadelphia surgeon, previous to the inauguration of his personal experiments early in 1893, had knowledge only of facts that were the common property of surgeons generally. Possibly the existence of a relation between the testicles and the prostate gland, similar to that known to exist between the ovaries and the uterus, had independently occurred to the minds of some surgeons before the publication of White's memoir. Mansell-Moullin has since stated, in his little book on "Enlargement of the Prostate," that in November, 1892, he had discussed with a patient the advisability of trying such an operation, but that the patient declined to have the experiment made upon himself. Even this date was six months after the beginning of White's investigation of the subject, and at any rate Mr. Moullin seems to have himself regarded the proposition as a passing caprice, and to have dismissed it from serious consideration, for, notwithstanding the large number of cases of prostatic overgrowth that are continually demanding surgical relief for the most urgent suffering, he does not claim to have considered the subject again until after the publication of White's memoir, nearly a year later, since which time he has unreservedly advocated the operation.

Perhaps no surgeon ever received a greater compliment from another than Mr. Moullin has given Dr. White in the opening sentence of the chapter (XI) in the book referred to, p. 154, which is as follows:

"Removal of the testes is followed in a large proportion of cases, if not in all, by complete and rapid absorption of the enlarged prostate. This has now been proved conclusively. The gland entirely disappears; nothing is left but a little fibrous mass."

It is true that in the later paragraphs of this chapter the author does not specifically state that White had first demonstrated this fact by an elaborate series of experiments upon the lower animals undertaken for the express purpose of determining whether or not such an influence could be exerted upon the prostate by removal of the testicles, and whether, if so, it was sufficiently certain to justify the adoption of the procedure as a therapeutic resource in the prostatic overgrowths of men. It is to be presumed that Mr. Moullin did not think it necessary to restate in so many words what he knew that all the surgical world already knew. An implied compliment is always greater than a baldly stated one, and, although it would have been a much more graceful thing for the London surgeon to have fully and specifically stated the real character of the work that had been done by his Philadelphia colleague, it was not necessary, for its omission could not detract from the well-earned credit which is universally ascribed to the latter for his masterly work. An undue sensitiveness has been displayed by some of the American medical journals as to the way in which Mr. Moullin has chosen to speak of Professor White's work, as if in some way the credit of the latter had been assailed, and an important question as to priority had been raised. There is certainly no ground for any of this feeling.

As to actual priority of performance, three months after the publication of Dr. White's memoir a Norwegian surgeon, Ramm, of Christiania, published (September, 1893) the statement that in April of that year, before the reading of White's paper, he had removed the testicles from an old man as an experiment for the purpose of producing atrophy of an enlarged prostate.

In some English and American journals there has been of late quite a number of communications upon various phases of this subject. Not the least interesting is the statement by Harrison, of London, that years ago a patient had requested of him that he would remove his testicles in the hope that it might benefit his prostatic disease! This the surgeon refused to do, and contented himself with subcutaneously dividing the vasa deferentia of his patient, and then "thought nothing further of it" until the fact was recalled by reading White's paper. Here, as far as information goes up to date, would seem to be the real father of the operation. For this man not only conceived the idea, but offered his own body for the performance of the experiment. It is to be regretted that Mr. Harrison did not take advantage of the offer, for, with the light of after events, it is quite apparent that he missed a great opportunity.

These questions of priority of mental conception, of suggestion, or even of actual performance are of little importance. As far as the surgical world is concerned, the fact is undeniable that the general serious consideration of the possible value of the removal of the testicles as a therapeutic measure in the treatment of prostatic hypertrophy dates from June 1, 1893, when J. William White read his paper upon "The Present Position of the Surgery of the Hypertrophied Prostate" before the American Surgical Association. Without this work of White, the subsequently-published cases of Ramm would have attracted but little attention; the operations of Haynes and of many other surgeons which have since been reported would not have been made, and Chapter XI of Mansell-Moullin's book on "Enlargement of the Prostate" would never have been written.

L. S. PILCHER.